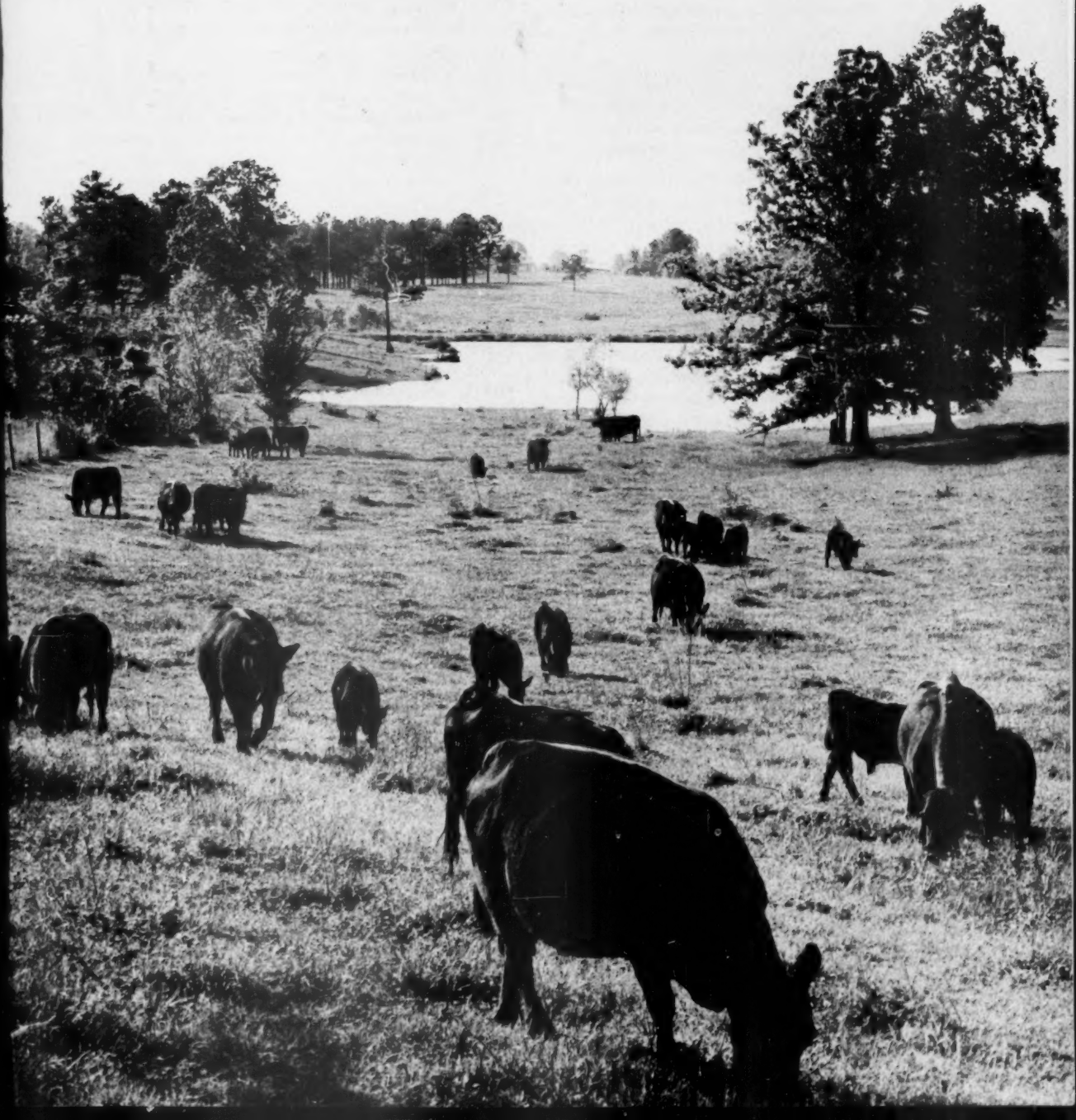
SOIL conservation

U. S. Department of Agriculture / Soil Conservation Service / July 1975



From the Administrator

Grazing Lands: The Pressure Is On

We have an urgent need to accelerate SCS technical assistance to cooperators on grazing lands.

Not only is there pressure on these lands to increase livestock production, but also for recreation, for wildlife habitat, and for some conversion to cropland.

Yet, if we could apply what we know to all these lands today, we could substantially increase total forage production and still use part of the acreage for other purposes.

We not only know how to increase forage production, but we also know how to improve wildlife habitat and protect our land and water resources. In Nebraska, planned grazing systems are not only increasing forage production on rangelands—and thus the stocking rate—and improving range condition, but ranchers also are praising these grazing systems for blowout control in the Sandhills. In Texas, a side benefit of short duration range grazing systems has been a tremendous improvement in upland wildlife habitat. White-tailed deer have increased fourfold in many areas, adding income to ranchers through recreation and hunting. These systems have grown phenomenally in the Southwest. In Texas, in 6 years, they have become the most popular form of planned grazing system, with 400 short duration systems on 2 million acres. In Utah, rest rotation grazing systems have been successful with both sheep and cattle, with increases of up to 30 percent in feed produced. In Iowa, forage shortages during the hot summer months may be alleviated by the use of warm season native grasses.

There's a lot going on around the country in terms of increased forage production—both in terms of improved pastures and planned grazing systems. We don't have all the answers. Admittedly, good grazing systems have yet to be developed for some parts of the country. But in most places, we can help farmers and ranchers improve their forage production now while protecting the land.

The pressure is on our grazing lands. We need to help farmers and ranchers develop a plan specifically for their operating units to fit their goals and capabilities for production and for conservation and to meet their individual feed and forage opportunities.

R. M. DAVIS

R. M. (Mel) Davis is the fifth administrator of the Soil Conservation Service, succeeding Kenneth E. Grant, who retired May 30.

Formerly assistant administrator of SCS, Davis has been with the Service since 1952. He held several field positions in North Dakota before becoming assistant state conservationist in Pennsylvania in 1963 and has served as state conservationist in Pennsylvania and in the dual position of administrator's field representative for the northeastern states and director of the SCS Technical Service Center at Upper Darby, Pennsylvania.

A native of Ambrose, North Dakota, Davis, 48, graduated from North Dakota State University with a B.S. degree in agricultural education.

His appointment, effective June 1, was announced by Secretary of Agriculture Earl L. Butz.

Grant, 55, began his career with SCS in 1946 as a soil scientist in his native New Hampshire. He served as state conservationist in New Hampshire and was state conservationist in Indiana. He was named administrator of SCS in 1969. A graduate of the University of New Hampshire, Grant has received USDA's highest honor, the Distinguished Service Award.

SOIL conservation

July 1975, Vol. 40, No. 12

Soil Conservation is the official magazine of the Soil Conservation Service. The Secretary of Agriculture has determined that publication of this periodical is necessary in transaction of public business required by law of this Department. Use of funds for printing **Soil Conservation** has been approved by the Director of the Office of Management and Budget through July 31, 1978.

Earl L. Butz
Secretary of Agriculture

R. M. Davis, Administrator
Soil Conservation Service

Prepared in the Division of Information, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C. 20250.

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Subscriptions
$6.85 per year, $8.60 foreign. Single copy, 55 cents. Discount of 25 percent on orders of 100 or more sent to the same address. Order direct from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402

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COVER: Conservation practices helped reclaim this former abandoned and eroded cotton farm in the Tallahatchie County (Miss.) Soil Conservation District. Beginning on page 12, four 40-year veterans of the Soil Conservation Service talk about conservation work over the years.

A Growing Tree Program In Sanilac

by Erwin Carter
Chairman, Forestry Committee,
Sanilac Soil Conservation District, Carsonville, Michigan

There are few things in life more thoroughly profitable than trees. Soil profits from the protection that trees provide. Birds and other wildlife profit from the food and shelter that trees supply. The air profits from the action of the trees, which replenishes oxygen, cools the air, and cleans it during photosynthesis. Man profits from trees whenever he eats fruit, saws wood, rests under the shade of a tree, pours maple sirup on his griddlecakes, reads articles such as this printed on paper, or breathes.

There are few things more profitable to a landowner than trees. They cost very little to plant, and provide fruit and nuts, shade and beauty.

And, there are few things more profitable to a soil conservation district than trees. If this last statement needs any proof, we can provide it up in Michigan. Our district, the Sanilac Soil Conservation District, has a very successful tree-planting program.

The 615,000-acre county is large by Michigan standards, and rich in loamy lake bed soils. Ours is a big dairy county with three times as many cows as people. Much of our good land is used to produce sugar-beets, navy beans, or feed for the dairy cattle.

It might be asked, why plant trees on such good farmland?

Not all of Sanilac's 615,000 acres are flat, fertile land. Some soils are less desirable for farming because of slope, coarse texture, or susceptibility to erosion.

We firmly believe that each acre of soil in Sanilac is best suited to a particular purpose, and we aim to see that each acre is put to its best use. This is good land use—the aim of every good soil conservation district today.

Our tree planting program was the result of a variety of events.

First, we recognized that every acre was not suited to corn, beans, or even hay. This came as a result of our district being completely soils mapped, with soil interpretations for each soil type. Some soils clearly should have been in woodland.

The district got help in stimulating tree planting. Soil Conservation Service personnel recognized the need and encouraged landowners to consider trees where desirable. The Agricultural Stabilization and Conservation Service through its newsletters and cost-sharing program spread the word around the district. Our local newspapers gave good coverage to stories written with a tree planting theme.

Next, we needed a way to get trees in the ground without too much hand labor from which people are inclined to shy away. After looking at a tree planter I went home and built my own. It was a three point hitch type and it did the job. Later, when the program expanded, I built a second, similar planter with some improvements and four other planters for neighboring districts.

As evidence of how the program has grown, we planted a total of 70,000 trees in 1965; by 1972, that figure was half a million. Interestingly, approximately 75 percent of these went on lands of absentee owners—people wanting to spread out if only for the weekend, and yet wanting to do the best for their land. We have found that when nonagricultural persons purchase land, the first thing they look for is water but the second thing they want is trees.

A program of this size is difficult to administer, but ordering trees from nurseries 6 to 12 months in advance helps to assure an adequate supply of stock. Arrangements are made to have them arrive in Sandusky

The author at work—putting in trees with the tree planter he built.

about the 20th of April.

Two days are spent by the directors and their wives in packing the trees for easy pick-up by the landowners on a Friday and Saturday. Landowners, who pay for the trees and the planting, can get their seedlings packed in peat moss at the pickup station, the Sandusky fair grounds. The district provides a variety of hardwoods and evergreens for nearly all local soil types and tries to show a profit for handling the seedlings by charging approximately the cost for large orders and more for small orders.

We've made mistakes but each year we try to streamline the program and correct errors. We've talked trees when we should have talked seedlings—one landowner, who had ordered only 200 seedlings which he could have carried with one arm, came with a trailer. One time we planted trees on the wrong farm. No one is perfect.

On the other hand, many benefits have been derived from the building of a successful tree program.

First, of course, we have planted many trees on soils which are best suited to trees.

Second, the revenue the district has realized has enabled us to carry on other conservation programs, and the various programs enhance each other. This includes a sixth graders' tour each year with all schools invited. Every Arbor Day each third grader in the county is given a white pine seedling, our state tree, to plant at his home. A tree identification contest has helped stir interest in the high school classes. A scrapbook contest has included the younger boys and girls and started them talking conservation at home.

Profits from the program have made it possible for us to send teachers to conservation school, a state program designed to instruct people in soil and water conservation. Our directors now have a district aide whose salary is paid in part by funds from the tree planting program. Attendance at state and national conventions has been partly financed by the monies.

And each of us, as we grow older, enjoys driving through the district and seeing conservation on the land—trees healthy and growing for the next generation. ♦

A Western Watershed:

100 Years Later

by Gerald Jorgenson*
District conservationist, SCS, Provo, Utah

Most people think the West was won with wagon trains and iron horses, Colts and Winchesters, gold pans and cattle drives. In truth, perhaps more than anything else, the American West was won with dams and ditches, for in the West, water is king.

The settlers in Ferron, Utah, knew this, and for the last 100 years they and their descendants have been working to manage this precious, and dangerous, resource. In recent years, they have done this through a major P.L. 566 watershed project.

The first settlers moved into Ferron in December of 1877, and by Christmas Eve they had surveyed the first irrigation ditch south of the present town. The winter was passed in building the structure, and Molen Ditch supplied water to the settlers' gardens in the spring of '78. That same year a second ditch, Petersen Ditch, was also constructed.

More than a decade later, a reservoir was built in the mountains above the town; and in 1905 the Ferron Canal and Reservoir Company was organized in an attempt to solve water problems.

Since the 1870's, overgrazing had caused a depletion of the natural vegetation. As snow melted in the spring, heavy runoff caused flooding of the lower areas. Heavy thunderstorms in the late summer caused torrents of silt and debris-laden water to run onto the cropland and through Ferron; more than one life has been lost in the floodwaters.

On the other hand, as much as half of the annual water yield of Ferron Creek comes within 15 to 30 days during May and June. Stream flow in March and early April is insufficient for preplowing and preplanting irrigation, and water supplies drop drastically once again in July and August.

In the early 1960's, area residents united behind the Ferron Canal and Reservoir Company, Ferron Town, San Rafael Soil Conservation District, and Emery County to seek approval for a water project under P.L. 566. In August 1962, the Soil Conservation Service approved planning assistance for the project, and in May of 1965, Congress approved the $7 million Ferron project.

The U.S. Forest Service and the Department of the Interior's Bureau of Land Management began treatment of some 29,000 acres of federal lands to improve the watershed. Treatment included contour trenching, contour furrows, pinion-juniper and sagebrush control, erosion control, fencing, reseeding, and livestock and wildlife water developments.

(continued on p. 8)

* Formerly district conservationist, Castle Dale, Utah.

An aerial view shows the Mill Site Reservoir and cropland irrigated from it near Ferron, Utah.

Ferron Creek flows from the dam outlet.

The first construction completed under the new watershed project was the relocation of 2,000 linear feet of the Molen Ditch. In addition, a 1,200-foot cut was made through shale on the North Ditch. In August 1967, construction began on five debris basins. Next came relocation of approximately 3 miles of county road so that a dam and reservoir could be built at an area known as the Mill Site.

In June 1969 at groundbreaking ceremonies for the Mill Site Dam, a thunderous dynamite charge moved the first earth. Two years later, dedication ceremonies took place as water began filling the 19,000 acre-feet reservoir.

That first year, the reservoir held back 10,000 acre-feet of water to be used in late July and August.

"This made possible a third cutting of alfalfa hay and an additional irrigation of pastures," said Ellis Wild, president of the Ferron Canal and Reservoir Company. "Even with a below average water year, most irrigators had all the water they needed."

In the fall of 1971, construction started on two more debris basins and the main divider structure at the heads of the three main canals—the North Ditch, South Ditch, and the Molen Ditch. In addition, a 900-foot-long, 42-inch diameter concrete-pipe siphon was installed in the South Ditch.

During the spring and summer of 1974, the last debris basin and the Duck Fork Fishery were built. Storage rights in the Duck Fork and Willow Lake Reservoirs were sold to the Utah Division of Wildlife Resources for the development of fishing and recreation opportunities. Fish have been stocked in the Mill Site Reservoir. A boat ramp has been constructed, and plans have been drawn by the Utah Division of Parks and Recreation for the development of camping facilities.

In the early years of the Ferron Watershed project, a group of nine farmers owning land east of Ferron installed approximately 11 miles of plastic pipe and watering troughs for their livestock. This project and four or five others received assistance through the ACP and REAP programs. Several similar systems were installed by other groups.

The largest and most complex pipeline consisted of a 2-mile long, 4-inch main line to the town of Clawson and then a system of approximately 11 miles of smaller pipe to the farms north, east, and west of Clawson. One state and four federal agencies assisted in cost sharing and in planning this project along with the local people. Until this pipeline system was completed, Clawson received its domestic water from the irrigation canal.

Much has happened in the

9 years since the first earth was turned for this watershed project. Clear water now runs in canals where muddy water previously flowed. Silt deposits in canals and on farm lands diminished.

The economy of the area has improved and is now more stable. Paul Crawford, chairman of the San Rafael Soil Conservation District, said: "I can now count on a third cutting of alfalfa. My corn and grain production has also increased, and with an assured water supply, we can now apply more fertilizer."

Sam Singleton attributes his increase of 8,000 bales of hay to the additional water supply and the additional fertilizer he could apply because of it. Land values have increased.

Each year a few more people move back to the hometown as jobs and business opportunities open up to them. Many are happy to leave the hustle and bustle of city life to again enjoy the peaceful, pleasant atmosphere of country living.

This resettlement is symbolic —it reflects the fulfillment of a century of effort by the people of Ferron. ♦

Farther downstream, the main divider structure is at the heads of the three main canals—North Ditch, South Ditch, and Molen Ditch.

Planting for Pheasants

S. Duane Town
District conservationist, SCS, Vale, Oregon

Leo Rickard, a semi-retired Vale, Oregon, lumberman, now has what he wanted when he bought 160 acres north of town in 1971—excellent food and cover for a bountiful crop of game birds.

And Rickard's tenant, Tony Mendive, who goes along with Rickard's wildlife plantings, has some 80 acres of land that can be better irrigated and drained then they ever were before.

Four years ago, Rickard asked the Malheur County Soil and Water Conservation District to help him develop a farm conservation plan emphasizing erosion control, improved crop production, and bird hunting.

Weeks later Bob Corthell, the Soil Conservation Service state office biologist in Portland, Oregon, and I walked the fields with Rickard to see where to begin.

After a half day's look, we began to consider the alternatives that presented themselves for the development of the conservation plan to improve the cropland and develop wildlife habitat.

Willow Creek, which angles through the farm, offered excellent food and cover potential for game birds.

Rickard's plan recorded his decision to redo the irrigation system for the 80 cropped acres, control erosion along the creek's banks, and provide food and cover for birds.

The south 40 had a real alkali problem. Rickard staked the field and SCS surveyed and figured the grade so it would irrigate east. The conservation contractor leveled the field. Now it can be well irrigated and its alkalinity reduced. The north 40 also was leveled, but to irrigate to the south. About 2,200 feet of concrete-lined irrigation ditch were put in on the west side of the 40's and 1,074 feet across the north end.

The Portland wildlife biolo-

In carrying out his conservation plan, Leo Rickard had the steep west bank of Willow Creek sloped 3:1 and seeded. Willow cuttings will be set out along the edge of the stream.

gist suggested a trial be made of sloping the west bank of Willow Creek and seeding it. The vertical bank stood about 10 feet high. Rickard consulted the Oregon Wildlife Commission and filed an application for a permit with Oregon's Department of Environmental Quality before he was given the green light. Using a dragline the contractor gave the banks a 3:1 slope. Rickard then seeded the slope to Topar pubescent wheatgrass, Nomad alfalfa, and midget milo. He used a portable sprinkler to establish the bank seedlings. Topar's extensive root system holds the soil in place on the bank. Increased channel capacity also helps during high water flows.

This seeded bank has furnished excellent food and cover for pheasants. Livestock are kept off the streambank.

Several odd space, wildlife plantings were made, including 2 acres of midget milo. Corn was also planted as part of the farm's operation. Some strips were left unharvested for food and cover; the rest were cut for ensilage.

When opening day for pheasants arrived last year in Oregon, Rickard and a friend headed across the road with Rickard's two Brittany spaniels, Duffy and Sandy. Their plans were to first hunt the 2-acre patch of midget milo. The two hunters positioned themselves as the spaniels went to work, and the milo patch literally exploded with pheasants. The hunters were so amazed, they had problems deciding which cock to zero in on. Final score for the milo patch that morning was only two birds.

In May 1974 Rickard bought the adjoining 160 acres. He revised his original conservation plan and he'll improve the additional cropland by leveling, revising the irrigation system and drainage, and he'll make additional wildlife plantings. Additional streambank improvement is part of the plan as there is a serious problem of streambank erosion and loss of good cropland. Willow plantings will be put in along the edge of the stream to stabilize the bank and provide game cover.

"With a harvest of close to 75 cock pheasants during the 1974 season, I'm beginning to believe that Corthell knows what he's talking about when he says good feed and cover will attract them," Rickard commented. ♦

Rickard shows a head from the midget milo patch he's planted for pheasants. Last year, hunters harvested nearly 75 cock pheasants on his farm near Vale, Oregon.

Forty Years With SCS

WILSON T. MOON

Forty years ago the Soil Conservation Service was created by Congress in response to one of the worst environmental crises of our history. Today SCS still counts in its ranks many conservationists who began their work with the Service in 1935. As ***Soil Conservation*** *winds up its 40th year, we asked four of these veterans to give us their views on the environment, the Service, and the conservation movement.*

Wilson T. Moon *began his SCS career in Texas, and after serving also in Arkansas, New Mexico, and Indiana, is now state conservationist for Iowa.**

Neal Munch *started in SCS as an assistant agronomist in New Brunswick, New Jersey. He has worked in New Jersey throughout his career and is presently SCS's district conservationist in Freehold.*

Charles W. Naylor *has worked mostly in Kansas and Oklahoma during his 40-year career, starting as a junior technical foreman in Mankato, Kansas. He is now district conservationist at Concordia, Kansas, on the eastern edge of the Great Plains.*

Walter C. Nelms *began his SCS career as a technical foreman in Ashland, Mississippi, and has worked in various SCS offices in Mississippi. He is now SCS's assistant state conservationist for Mississippi.*

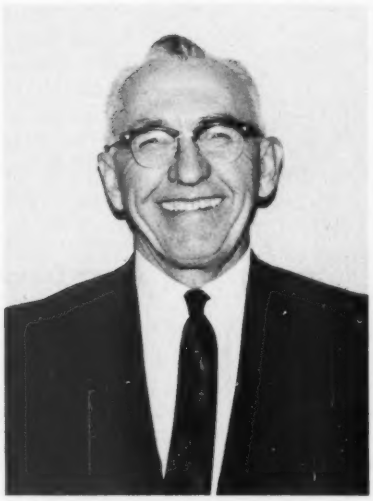
How has the American environment changed in the last 40 years?

Naylor: There's been a change in farming methods. Back in the 1930's, many farmers in western Kansas were burning the stubble. Then we hit 3 dry years and the soil began to move. Today farmers do not permit this to happen; they protect the soil by keeping residue on or near the surface. The conditions that cause soil losses, particularly blowing, will continue because some people get careless. But the problem has been reduced until it is no longer a national problem.

Moon: We've come a long way in conservation. This doesn't minimize the problems that we still have, but today we know a great deal more, and the problems aren't as great as they were in the West in those days. We've plowed up more land, but we've made progress in techniques that will prevent it from eroding. We've turned a lot of land back into grass and hay and established thousands of acres of strips of vegetation through the Great Plains

* Moon retired June 30.

WALTER C. NELMS



CHARLES W. NAYLOR

NEAL MUNCH

Conservation Program and our conservation practices.

Nelms: Forty years ago, erosion was a tremendous problem in Mississippi. Thousands of acres of land were virtually destroyed by gullies. Those gullies were spouting millions of tons of sediment, which were clogging up streams and choking drainage systems. Sediment covered roads and railroads. We have pictures of tenant houses in the Delta that were covered right up to the eaves. It's hard to imagine now when you go through that hill country that we once had that problem; most of that land is now covered by pine trees and pastures that hide the gullies and protect the soil.

Munch: Here we had mostly farmland. All of a sudden, after the war, homes began sprouting all over. I don't think we're improving the environment here—we're slowing up its deterioration. In this county, we're losing about 3,000 acres of farmland a year. There's more pollution, and now the air in Freehold is unsatisfactory several days a year. The natural beauty and vegetation that we had here is leaving us as population pressures mount. But things would be much worse if it weren't for our work.

What were SCS operations like in the 1930's?

Nelms: Of course, our operations were fairly primitive. We built terraces with slipscoops, each of which held about a barrelful of dirt and was pulled by a team of mules. We had CCC boys, so we shaped by hand waterways up to 30 feet wide and as much as a half-mile long. We attacked the gully problem with various tools. First we went in and built brush-dams to serve as sediment traps at the bottom of the gullies. We used dynamite in some instances to blow in the gully banks and then planted trees and other cover: kudzu, lovegrass, or honeysuckle. Sometimes we used concrete for small structures, mixing it by hand with shovels and pulling it in wheelbarrows. A man was pretty much on his own; there were no technical guides and everything was experimental.

Naylor: Those were interesting days, those old project days when we were trying practices. It was a real experience to me, because things were tried and found wanting that some people are still proposing today.

Munch: It's a wonder they didn't throw us off the farm, we were trying so many things.

Was it hard to convince farmers to try these new practices?

Naylor: Farmers were reluctant to use them until they were thoroughly proven. So it's a gradual process. Usually your leaders will try these things, and if they prove to be successful, neighbors will try them. People accept practices such as stubble mulching as standard today. Years ago people had doubts about them.

Nelms: Farmers were all for treating the gullies but were slow to let us change their cropland

about. We never did get many farmers to try crop rotation in Mississippi.

How has our program changed?

Moon: The program has expanded tremendously. In our early days, we were taking a "practice" approach; we were an erosion control agency. Now we work on the basis of a complete conservation program and we talk in terms of total resource management systems. That's proven in the way that our programs have expanded. We didn't have any of our resource conservation and development work, watershed work, or river basin studies then. We've improved our techniques and adopted them to present day needs.

Nelms: Almost unbelievable advances in the breadth of our programs and technology have been made. For instance, our program in the Delta area has advanced to the point that we're doing land-forming to completely reshape the land and to rearrange drainage patterns for entire farms.

Munch: The principles of conservation are the same, but now we're working with city people, schools, industries, and real estate developers, who generally don't have the knowledge of and appreciation for the land that farmers have.

Nelms: More Americans are concerned about the environment now. There were people who were concerned about it back then, but they were men whose land and livelihood were being washed out from under them. Today, with improved communications, city people also have an interest in the environment. This has caused us to face up to more improvements that we must make in our programs.

Do the new men in SCS still share the attitudes of the men who founded the agency back in the 1930's?

Munch: We were learning then. And we still are—the new men have the same attitude.

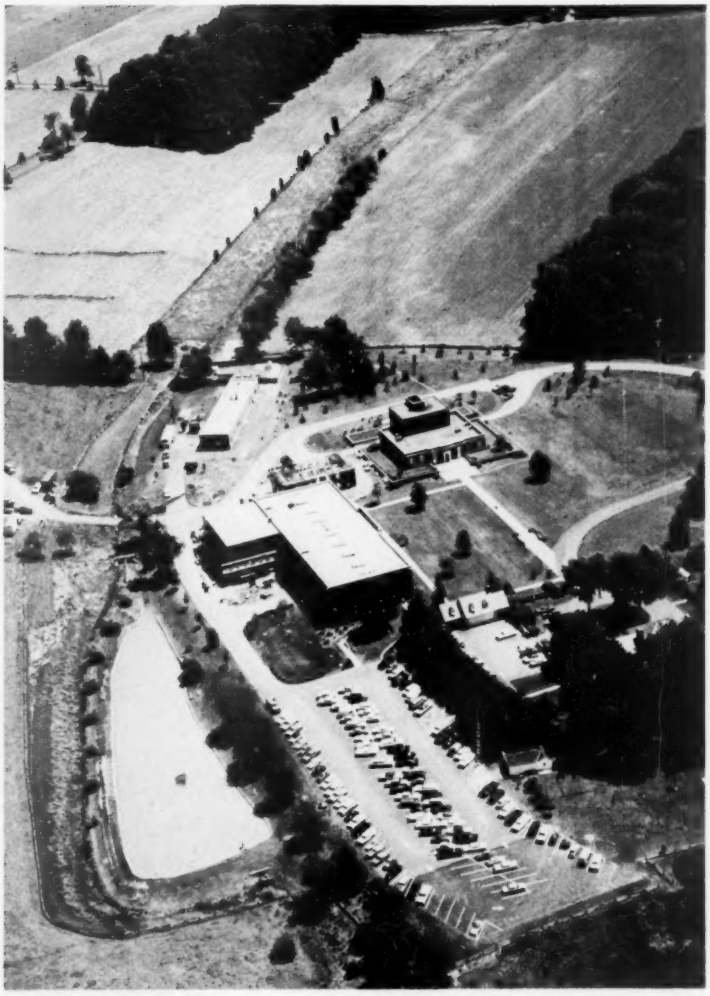
Moon: When I came to the organization, you were looking for a job, and any job you got you were grateful for. I was lucky to get a job with the Soil Conservation Service.

Nelms: The men we hire today are more independent. When they select the Soil Conservation Service it's because they want to, not because they need the job. Accordingly, we are getting fine young men who are particularly interested in the job.

Naylor: Personally, I feel the dedication of people in the Soil Conservation Service continues to be outstanding.

Moon: Our people are better trained now. We're a stronger organization today than we were in those days, to tell the truth.

Contour stripcropping on a farm near Garnavillo, Iowa.



A small pond next to buildings is used for recreation and to test the purity of the water in the Mercer County (N.J.) Soil Conservation District.

What do you consider the most important accomplishments of SCS in the last 40 years?

Moon: The most important accomplishment has been the establishment of conservation measures on the land to maintain our natural resource base and to keep our country productive.

Naylor: We've made the public aware of the soil losses that do affect, in the long run, farm economics. SCS has created this awareness in every county in Kansas.

Nelms: The most beneficial accomplishment here has been the changes in land use. These changes moved crops down into the bottomlands which are more suitable for that use, and put the uplands in grass and trees. This was made possible by improving drainage and flood prevention. These changes began as we put in watershed projects to protect bottomlands. Over a million acres of such land-use adjustments have been made in Mississippi.

Local conservation districts played a large part in these accomplishments, didn't they?

Munch: I think they've had a real impact. They've been a great guide to us here; they've put us on a good basis. The supervisors we've had have helped SCS get our job done, and they've looked ahead of us and got SCS involved in things that later became Service policy.

Moon: Without soil conservation districts, we

would not have had the acceptance necessary to do the job. The farmers have confidence in this system. The fact that district supervisors are local people who don't get paid and are nonpartisan has helped them achieve their acceptance. Because of our close association with this group of people, we were able to gain the acceptance of not only the rural sector, but urban people as well.

What about the future? Where does SCS go from here?

Moon: Where SCS is going is up, up, up! The interest is high, the organization is strong, the needs are *definitely* there, and the acceptance is there because we learned long ago, in the early days, to work with local people. Grassroots people have confidence in our work.

Munch: One thing SCS will have to do is to get more involved in population pressures. The numbers of people have caused many of the joys and pleasures of the outdoors to erode away. We're involved in conservation; without considering population, though, we're not getting down to the nitty-gritty of what should be done.

Nelms: The extent of protection needed for our environment and our natural resource base will continue to increase as we demand pure air and water. We once thought that a 5 ton per acre soil loss was all right because it didn't destroy the field. Now we know that even a 2 ton soil loss will pollute a stream. In this kind of situation it is real hard to say you've ever gotten the job finished.

Moon: There's a lot that remains to be done. There are so many more pressures for different uses of our land and water resources as population grows, that there's an entirely different focus in what we ought to emphasize. We've had to replan, readjust.

Naylor: Times are changing very rapidly; farming techniques are changing; and Service techniques will have to keep abreast of the times.

Munch: One of our strengths is that we have personnel in the field close to the people. Although our duties will vary and grow, I think we'll still be here, doing the job. ♦

An award-winning conservation farm in Brown County, Kansas, includes a terrace system supported by contour farming and a good system of crop rotation. An erosion control dam stabilizes the lower end of the bromegrass waterway.

Bill and Jim Wientjes and author discuss improved range condition after 1 year of deferment on the Wientjes' ranch near Mound City, South Dakota.

Improving Rangeland in South Dakota

by Wayne L. Noble
District conservationist, SCS, Herreid, South Dakota

A drought-proof ranch.

That's what Jim and Bill Wientjes feel they've accomplished on their 3,800-acre ranch in Campbell County, South Dakota.

The two brothers developed a conservation plan with the help of the Soil Conservation Service in 1966 and signed a Great Plains Conservation Program contract the same year. They're both cooperators with the Campbell County Conservation District.

With a goal of improving their rangeland, the brothers started a program of resting pastures. Year-long resting not only improves the vigor of grasses but also gives time for seed production and the establishment of seedlings. "Resting a pasture for the whole growing season is the best improvement practice we have found," Bill Wientjes said.

The Wientjes built four stock dams, laid pipelines to two pastures, developed two springs, and built 1½ miles of cross fence to distribute grazing for proper grassland management. They fenced three dams to improve shoreline vegetation for erosion control and wildlife. They've also established grassed waterways and stripcropping, seeded tame grasses for hay, and planted trees for livestock protection.

"We particularly benefited during the dry year of 1974 with near-normal calf gains," said Jim Wientjes, who is an assistant supervisor with the Campbell County Conservation District.

"We also have less expense keeping a cow by balancing our grass resource. By increasing grass production and adjusting livestock numbers in a dry year, we've helped make this a drought-proof ranch."

In 1972, the two brothers were named "Rangeman of the Year" by the South Dakota Section, Society of Range Management. ♦

Tackling the Shuffling, Shouting Sands

by Noel Marsh
Area range conservationist, SCS, Roswell, New Mexico

When once-peaceful "shifting, whispering" sands begin to shout and dance about, they can attract a great deal of attention and lose their romantic appeal. They begin to threaten farmsteads, highways, and communities and to bury cropland and fences.

Sand dunes build and become activated through disturbance of the natural vegetation which once held these deep sands in place. Source areas often are livestock wells, homesteads, and unsuccessful dryland farms. An active sand dune may advance 50 yards or more a year in a direction with the prevailing strong winds.

This spring in New Mexico, however, Weldon Bauske walked over the former dunes on his ranch in the deep sand country of Roosevelt County. Through technical assistance from the Soil Conservation Service, cost sharing through the Great Plains Conservation Program administered by SCS, and through several years of work and experimenting, he's established a good stand of vegetation on these dunes—a stand that's already stood the test of high winds late in April.

When Bauske, a construction contractor from Clovis, New Mexico, bought his 5-section ranch north of Portales, most of it was Deep Sand and Sand

As is often the case, this sand dune got its start around the livestock well where heavy use disturbed the natural vegetation.

Hills range in good to excellent range condition.

However, he had three sand dune blowout areas that covered about 300 acres. Such areas are not unusual in Roosevelt County. In the early 1940's, many isolated tracts of rangeland were broken out in attempts to raise dryland crops. Many of these attempts were unsuccessful due to climatic hazards, poor farming equipment and techniques, and improper management of the soil and crop residues. The devastating result is that there are an estimated 12,000 to 15,000 acres of blowouts and active duneland in the county today.

Bauske, however, was determined to do something about the active dunes and blowouts. He became a cooperator with the Roosevelt Soil and Water Conservation District and set his objectives to operate both a registered and commercial cow-calf enterprise, improve production, and stabilize and revegetate the dune and blowout areas.

With technical help from the Soil Conservation Service, Bauske developed his conservation plan. His initial decisions included water developments and fencing for better livestock distribution and more intensive management. He planned and followed a grazing system which provided for periodic intensive grazing and growing season rest of the key grasses. The grazing system was coordinated with his livestock breeding and management program.

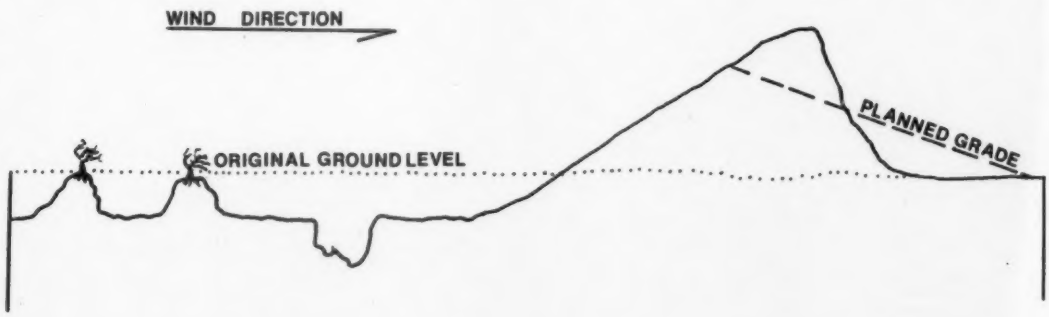
Bauske then tackled his dune areas. While the technology and materials were available to speed up the recovery of dune areas, SCS advised Bauske that costs of the operation usually exceed the value of the rangeland, even after improvement. Bauske's reply was not whether or not to try; but how soon could he get started?

Sand dune blowout areas are referred to as "critical areas" by SCS, meaning that they require special techniques to establish and maintain acceptable vegetative cover.

In the case of these sand dune blowout areas on the high plains of New Mexico, adverse climate, soil, and topography all need to be considered.

Each sand dune blowout area was broken down into three parts based on characteristics and treatments needed to stabilize and revegetate them. These are (1) contributing area, (2) front side of dune, and (3) back side of dune. Each area was first fenced, with sizable areas of native grassland included to provide a continuing natural seed source.

The contributing area is characterized by wind monuments or hummocks, water erosion channels, and an exposed, hard, impermeable subsoil. Treatment calls for general smoothing, knocking down hummocks, and filling in channels. Chisels were used to break the impervious soil crust and then listers were used to furrow these contributing areas at right angles to the direction of prevailing strong winds. This facilitates catching some loose



CROSS SECTION of a sand dune blowout area. At left, the contributing area has wind monuments, water erosion channels, and a hard impermeable subsoil. At right, the sand dune has a relatively gradual slope of sand deposition from the contributing area on the front side of the dune and a relatively steep bank on the back side.

After smoothing the contributing area to the dune, chisels were used to break the impervious soil crust and listers were used to furrow the area at right angles to the direction of prevailing strong winds.

soil and sand in the furrows and the infiltration of moisture into the soil, creating a better environment for plant growth. This practice is best done the fall prior to the summer during which the preparatory cover crop is to be planted.

To treat the front side, or windward slope, of the dune requires little or no grading since it is normally gently sloping and smooth. It is, however, essential to control wind and sand agitation from the contributing areas and to add fertilizer and organic matter in revegetating the front slope. The successful order of treatment is to begin by revegetating the contributing areas, followed by the front slope, and then the back slopes.

Following site preparation on the contributing areas, Bauske planted and fertilized broomcorn to produce adequate residue to protect and provide a home for the perennial grass seedlings the following year.

The cover crop is planted late enough in the season so that a killing frost will prevent seed maturity. This reduces the problem of volunteer competition to the permanent grass seeding the next season. Bauske found broomcorn to be superior to winter wheat as a cover crop because its thicker stalks better withstand strong winter and spring winds.

Bauske chose weeping lovegrass as the permanent cover since stabilization took priority over forage production on these contributing areas. Some weeping lovegrass had been established with the broomcorn, but Bauske seeded between rows into the cover crop the following summer.

On the dune areas themselves, Bauske tried combinations of both cover cropping and manure mulching. Some of the cover crops failed when reverse winds blew sand back over the plantings and buried them. Bauske found that mulching with 20 to 30 tons of feedlot manure per acre on the dune areas achieved superior results and was the most economical since feedlots were nearby.

Mulching with manure also had the advantages of adding organic matter, improving available soil moisture, and avoiding a 1-year delay in planting the perennial grass while waiting for an adequate cover crop.

Bauske seeded a mixture of improved varieties of native grasses on the dune areas—Elida Sand bluestem, Llano indiangrass, Pastura little blue-

stem, and Grenville switchgrass. He added minor amounts of giant dropseed and weeping lovegrass to insure a quick cover.

The small, reclaimed critical area pastures will remain protected from livestock grazing until the end of the second growing season following perennial grass seeding. They can be used for controlled, short period grazing, special purpose pastures, breeding pastures, or incorporated into the overall grazing system. Bauske has made livestock water permanently available to each of the areas.

Bauske believes the results he's experienced are worth the effort. In fact, some formerly doubting neighbors are starting to think about tackling their sands. ♦

On the dune areas themselves, a mixture of improved varieties of native grasses were seeded with minor amounts of giant dropseed and weeping lovegrass.

Recon...

Fewer farmers. A recent survey of directors of soil and water conservation districts in Michigan shows that fewer of the directors are full-time farmers than 5 years ago. According to the Michigan Department of Agriculture's *News & Views*, 66 percent of the current directors are full-time farmers, compared with nearly 80 percent in 1969. Other directors include county and state employees, teachers, bankers, realtors, and retirees. The full-time farmers managed an average of 377 acres each, with 110 reporting dairy and 110 indicating cash crops as the major enterprise. Of Michigan's 425 directors, 418 are male. Average age is about 51—3 years younger than in 1969. Average length of service for directors in Michigan is 7.8 years.

Water users. One out of 10 farms and ranches is irrigated, reports USDA's Economic Research Service (ERS), noting that agriculture is the largest single user of water in the Nation. Specialty crops have a special need for water—to protect against frost and to control high temperatures. Nearly 85 percent of all water consumed is used in rural areas—primarily for agriculture, homes, and industry, ERS noted.

Soil surveys

Kentucky

Daviess and Hancock Counties. By Frank R. Cox, Jr. 1974. Soil Conservation Service in cooperation with Kentucky Agricultural Experiment Station. 108 pp., illus.; maps.

Logan County. By James W. Dye, Arlin J. Barton, and Ronald D. Froedge. 1975. Soil Conservation Service in cooperation with Kentucky Agricultural Experiment Station. 78 pp., illus.; maps.

Pulaski County. By James C. Ross. 1974. Soil Conservation Service and Forest Service in cooperation with Kentucky Agricultural Experiment Station. 121 pp., illus.; maps.

Michigan

Livingston County. By Clarence A. Engberg and Franklin R. Austin. 1974. Soil Conservation Service in cooperation with Michigan Agricultural Experiment Station. 92 pp., illus.; maps.

Minnesota

Rice County. By Carroll R. Carlson, Joseph F. Cummins, Russell J. Edwards, Grenfall F. Harms, James J. Murray, Richard E. Rolling, Ronald Severson, and D. Kirk Woodworth. 1975. Soil Conservation Service in cooperation with University of Minnesota Agricultural Experiment Station. 118 pp., illus.; maps.

New Jersey

Hunterdon County. By C. F. Jablonski. 1974. Soil Conservation Service in cooperation with New Jersey Agricultural Experiment Station. 131 pp., illus.; maps.

New Mexico

Valencia County (Eastern Part). By Douglas S. Pease. 1975. Soil Conservation Service and United States Department of the Interior, Bureau of Indian Affairs, in cooperation with New Mexico Agricultural Experiment Station. 121 pp., illus.; maps.

Ohio

Henry County. By Everett C. Flesher, Jr., Kenneth L. Stone, Lloyd K. Young, and Donald R. Urban. 1974. Soil Conservation Service in cooperation with Ohio Department of Natural Resources, Division of Lands and Soil, and Ohio Agricultural Research and Development Center. 128 pp., illus.; maps.

Oklahoma

Alfalfa County. By Glen E. Williams and Edward S. Grover. 1975. Soil Conservation Service in cooperation with Oklahoma Agricultural Experiment Station. 76 pp., illus.; maps.

Meetings

South Dakota

Mellette County. By E. M. White. 1975 Soil Conservation Service and United States Department of the Interior, Bureau of Indian Affairs, in cooperation with South Dakota Agricultural Experiment Station. 112 pp., illus.; maps.

Sully County. By Gary J. Delaney. 1975. Soil Conservation Service in cooperation with South Dakota Agricultural Experiment Station. 83 pp., illus.; maps.

Texas

Gillespie County. By John E. Allison, Glen W. Dittmar, and James L. Hensell. 1975. Soil Conservation Service in cooperation with Texas Agricultural Experiment Station. 80 pp., illus.; maps.

Moore County. By Luther C. Geiger. 1975. Soil Conservation Service in cooperation with Texas Agricultural Experiment Station. 57 pp., illus.; maps.

West Virginia

Fayette and Raleigh Counties. By John L. Gorman and Lester E. Espy. 1975. Soil Conservation Service in cooperation with West Virginia University Agricultural Experiment Station. 76 pp., illus.; maps.

July

3–8 *National Education Association, Los Angeles, Calif.*
13–17 *Seventy-fifth Annual Meeting of American Society of Landscape Architects, San Antonio, Tex.*
19–23 *American Association of Nurserymen, Inc., Chicago, Ill.*
20–24 *National Federation of Business and Professional Women's Clubs, Inc., of the USA, Las Vegas, Nev.*

August

3–6 *National Farm and Power Equipment Dealers Association, Honolulu, Hawaii*
4–8 *American Society of Civil Engineers, Annual Hydraulic Specialty Conference, Seattle, Wash.*
10–13 *American Agricultural Economics Association, Columbus, Ohio*
10–13 *Soil Conservation Society of America, San Antonio, Tex.*
11–13 *American Society of Civil Engineers Watershed Management Symposium, Logan, Utah*
13–15 *American Society of Civil Engineers Irrigation and Drainage Specialty Conference, Logan, Utah*
13–15 *Twenty-Sixth Annual Highway Geology Symposium, Coeur d'Alene, Idaho*
17–22 *American Institute of Biological Science, Corvallis, Oreg.*
17–22 *Ecological Society of America, Corvallis, Oreg.*
24–29 *American Chemical Society, Chicago, Ill.*
24–29 *Joint Annual Meeting of American Society of Agronomy, Soil Science Society of America, and Crop Science Society of America, Knoxville, Tenn.*

September

3–5 *American Water Works Association (Chesapeake Section), Ocean City, Md.*
8–12 *International Association of Game, Fish and Conservation Commissioners, Las Vegas, Nev.*
8–13 *American Fisheries Society, Las Vegas, Nev.*
8–13 *American Horticultural Society Congress, Honolulu, Hawaii*
28–October 2 *National Association County Agricultural Agents, Milwaukee, Wis.*

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